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EXAMINER

ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

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DATE MAILED: 07/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/829,587

Applicant(s)

LAPTEV, PAVEL N.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 22-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 43-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 06 May 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Response to Restriction Requirement

1. Applicant's election of Group I, claims 1-21 in Paper No. is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-4, 7-9, 11, 14-16, 19-21, 43, 44, 45, 46, 47, and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Koshimizu (USPat. 5,980,687) and demonstrated by Mountsier et al (USPat. 5,810,933)¹. Koshimizu teaches a conduit (202, Figure 3) for molecules of a gas (column 5, lines 13-16), a first electrode (116, Figure 1,3) at a first position (116, Figure 1,3) biased to a first voltage (column 4, lines 43-55) and spaced from the wafer (W attached to 116, Figure 1,3), a second electrode at a second position (110, Figure 1,3) biased to a second voltage lower ("Thus, predetermined high frequency powers are, preferably the same high frequency power is, applied to the first and second susceptor 110 and 116, respectively"; column 4, lines 46-5 1) than the first voltage (column 4, lines 43-55) and spaced from the first electrode (116, Figure 1,3) and the wafer (W attached to 116, Figure 1,3) and further spaced from the wafer than the first electrode, as amended in claim 1 – The condition that the second electrode is spaced from the first electrode (116, Figure 1,3) and the wafer (W attached to 116, Figure 1,3) is immediately apparent according to Figure 3. That the second electrode is further spaced from the

¹ MPEP 2121.01

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wafer (W attached to 116, Figure 1,3) than the first electrode is also immediately apparent according to Figure 3. Further, that the second (110) electrode is contiguous (neighboring) to, but spaced from, the wafer (W attached to 116, Figure 1,3) is also taught by Koshimizu according to Figure 3 and as amended by claim 2. That the first (116) electrode is contiguous (neighboring) to, but spaced from, the wafer (W attached to 116, Figure 1,3) is inherently taught by Koshimizu according to Figure 3 and as demonstrated by Mountsier (see below) as amended by claim 8.

Although Koshimizu does not teach argon as the operating gas, it has been established that apparatus claims must distinguish from the prior art in terms of structure rather than function. See MPEP 2114. As a result, it is inherent that Koshimizu can supply argon as the etching gas.

Koshimizu further teaches a second electrode (110, Figure 1,3) at a second position biased to a second voltage lower (as above) than the first voltage and spaced from the first electrode (116, Figure 1,3) and the wafer, magnetic members (124, Figure 1,3) providing a magnetic field, the first electrode (116, Figure 1,3) and the magnetic members (124, Figure 1,3) being disposed relative to each other (114, Figure 1,3; column 3, lines 54-61). The magnetic members (124) further producing a magnetic field in the enclosure (102) in a direction transverse to the electric field as amended by claim 21 – The arrangement of Koshimizu's first and second electrodes relative to the location of Koshimizu's magnetic members teaches, based on fundamental physics, that Koshimizu's magnetic members (124) producing a magnetic field (not shown, circular flux lines around 124, 124a in the plane of the page, Figure 3) in the enclosure (102) that, when the magnetic field lines intersect the electric field lines (not shown, extending from one electrode to another), intersect in a direction transverse to the electric field. As result, when

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the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

The second electrode (110, Figure 1,3) and the wafer (W attached to 110, Figure 1,3) being disposed relative to each other (122, Figure 1,3; column 4, lines 13-22).

Koshimizu further teaches a first member (104, Figure 1,3) disposed adjacent the first electrode (116, Figure 1,3) for providing a reference potential different in magnitude (grounded, see Figure 1,3) from the bias on the first electrode (I 16, Figure 1,3) to create a first electrical field, and a second member (204, Figure 3, 4) disposed adjacent the second electrode (110, Figure 1,3) for providing the reference potential (also grounded - 204/208 contact with grounded 104 via 106 and 208/104 contact; Figures 3, 4) to create a second electrical field.

Koshimizu further teaches a first source (134) of alternating voltage for creating the bias on the first electrode, the bias on the first electrode being a negative direct voltage, the second source (130) of alternating voltage for creating the bias on the second electrode, the bias on the second electrode being a negative direct voltage - it is anticipated by Koshimizu and common practice in the art that all wafers (or other articles) positioned on supports or electrodes would necessarily have a gap between the wafer/article and the support surface upon which the wafer/article is resting or electrically clamped and where providing a direct current bias as a result of the first (134) and second (130) sources of alternating voltage. This is demonstrated by Mountsier who shows a typical wafer-support interface (62/52; Figure 6). As such, when the structure recited in

the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 5, 6, 10, 12, 13, 17, 18, 20, 48, 49, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koshimizu (USPat. 5,980,687) in view of Mountsier et al (USPat. 5,810,933). Koshimizu is discussed above, however Koshimizu does not teach that the wafer and the first electrode define a series relationship between two capacitors, one having a high capacity impedance and the other having a low capacity impedance. Koshimizu does not provide apparatus to support an electrically floating substrate supported by a powered electrode. Mountsier teaches a wafer support platform (52, Figure 5; column 4, lines 20-23) that provides a series relationship between two capacitors, one (68 dielectric gap; Figure 5; column 4, lines 2023) having a high capacity impedance and the other (80/82 dielectric gap; Figure 6) having a low capacity impedance. In particular, because the wafer support 52 is made of an electrical insulator (ceramic, column 5, lines 8-20) capacitance across the stated points is established and the wafer (62) is electrically floated.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Koshimizu to replace his wafer support platform with Mountsier's wafer support platform.

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Motivation for Koshimizu to replace his wafer support platform with Mountsier's wafer support platform is to provide an alternate means for supporting the substrate.

6. Claims 1-21, and 43-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's own admitted prior art in view of Mountsier et al (USPat. 5,810,933). Applicant teaches Figure 1 as prior art including the differences between the prior art device and the improvement as stated in the specification (Page 12, lines 1-9). Applicant admits that the sole difference between Applicant's admitted prior art and the invention is the separation of the electrode and the wafer (last line, Page 12, lines 1-9).

Mountsier, as stated above, teaches a wafer support platform (52, Figure 5; column 4, lines 2023) that provides a series relationship between two capacitors, one (68 dielectric gap; Figure 5; column 4, lines 20-23) having a high capacity impedance and the other (80/82 dielectric gap; Figure 6) having a low capacity impedance. In particular, because the wafer support 52 is made of an electrical insulator (ceramic, column 5, lines 8-20) capacitance across the stated points is established and the wafer (62) is electrically floated.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Koshimizu to replace his wafer support platform with Mountsier's wafer support platform.

Motivation for Koshimizu to replace his wafer support platform with Mountsier's wafer support platform is to provide an alternate means for supporting the substrate.

Response to Arguments

7. Applicant's arguments filed have been fully considered but they are not persuasive.

8. Applicant argues that Koshimizu differs from the presently claimed invention because Koshimizu does not teach:

- i. "that electrodes 116 and 110 are biased to different voltages" because "The Examiner appears to be interpreting Koshimizu on the basis that the susceptor 110 and 116 appear to be

operating on a single wafer". Applicant cites the Examiner's citation of Koshimizu in column 4, lines 43-55 in support – "...preferably the same high frequency power is, applied to the first and second susceptors 110 and 116, respectively." In response, the Examiner sets forth that Koshimizu places no limitations, or even correlations, in his teachings between the number of wafers he process and the relative voltages applied to Koshimizu's first and second electrodes. Further, applicant's arguments are not convincing. In response to applicant's argument that Koshimizu cannot anticipate the claimed invention because Koshimizu process two wafers and not one, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Additionally, it is well established that apparatus claims must be structurally distinguished from the prior art (*In re Danley*, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does ." (emphasis in original) *Hewlett - Packard Co. v. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), MPEP - 2114)

- ii. Applicant cites Koshimizu (column 6, lines 27-31):

“

Moreover, in the etching apparatus 100, wafers W fixed on the first and second susceptors 110 and 116 can simultaneously be subjected to the same etching process, thereby increasing the throughput of the apparatus.

“

as evidence to support Applicant's position that this citation of Koshimizu "confirms that the susceptors 110 and 116 operate independently of each other to process separate wafers W but it also confirms that the susceptors 110 and 116 receive the same power." The Examiner agrees that Koshimizu operates the second 110 and first electrodes 116 independently of each other to process any number of wafers including one. However, the Examiner disagrees that Applicant's citation of Koshimizu proves that the second 110 and first electrodes 116 only receive the same power. Why would Koshimizu state that "preferably the same high frequency power is applied to the first and second susceptors" (column 4, lines 48-50) and also provide two independent power sources 134 and 130 if Koshimizu's intention would only be to apply one power value to each of the second 110 and first electrodes 116? This would make any number of power sources greater than one redundant. Further, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

With regard to Applicant's request to show where in Koshimizu and Mountsier the references teach that the alternating voltage from Koshimizu's source 134 provides a DC bias on the first electrode 116 or that the alternating voltage from the source 130 provides a DC bias on the second electrode 110, Applicant is directed to Applicant's own specification which teaches that an alternating voltage (36, Figure 1) from Applicant's source provides a DC bias on the first electrode (22, Figure 1) and that the alternating voltage from the source (40, Figure 1) provides a DC bias on the second electrode (24, Figure 1) according to the description of the physical phenomena as provided by Applicant in page 9 and 10 of the specification. For example, "A negative bias is produced on the electrode 22 because of the alternating voltage applied to

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the electrode.” (lines 6-7, Page 10). Based on the identical physical processes resulting from the identical operation of Koshimizu’s corresponding apparatus components, the Examiner affirms that Koshimizu inherently teaches Applicant’s claimed invention. Further, when the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Applicant argues that “the members 104 and 204 do not have the same disposition relative to the electrodes 116 and 110 in Koshimizu that the plate 32 and the ring 30 have relative to the electrodes 24 and 22 in applicant’s system”. This is not convincing. Applicant broadly claims in claim 45 for example:

“

a first electrical conducting member is disposed in a cooperative relationship with the first electrode to provide for the production of the high electric field and wherein

a second electrical conducting member is disposed in a cooperative relationship with the second electrode to provide for the production of the low electric field.

“

As provided in prior actions, Koshimizu teaches a first electrical conducting member (104) is disposed in a cooperative relationship with the first electrode (116) to provide for the production of an electric field and wherein a second electrical conducting member (204) is disposed in a cooperative relationship with the second electrode (110) to provide for the production of a second electric field.

Regarding Applicant’s position that Koshimizu’s first (116) and second (110) electrodes do not have the negative biases that are recited for Applicant’s first and second electrodes, the Examiner disagrees. As can be seen by Koshimizu’s Figure 3 – the lead from each source (134, 130) to ground must be negative by electrical convention, the lead between sources (134, 130) and matching sources (132 and 128) must then be positive also by electrical convention, then the lead between the matching sources (132 and 128)

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and the first (116) and second (110) electrodes must be negative thereby making first (116) and second (110) electrodes cathodes that are defined to have negative bias.

9. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "susceptors 110 and 116 are not parallel") are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

10. Regarding the Examiner's citation of MPEP 2116.01. The citation was based on a prior version of the MPEP. Currently, the correct citation of anticipation rejections under plural references is provided:

MPEP 2121.01:

35 U.S.C. 102 REJECTIONS AND ADDITION OF EVIDENCE SHOWING
REFERENCE IS OPERABLE

It is possible to make a 35 U.S.C. 102 rejection even if the reference does not itself teach one of ordinary skill how to practice the invention, i.e., how to make or use the article disclosed. If the reference teaches every claimed element of the article, secondary evidence, such as other patents or publications, can be cited to show public possession of the method of making and/or using. In *re Donohue*, 766 F.2d at 533, 226 USPQ at 621. See MPEP § 2131.01 for more information on 35 U.S.C. 102 rejections using secondary references to show that the primary reference contains an "enabling disclosure."

11. Regarding Applicant's position that Mountsier does not show the claimed two capacitors. Applicant is again directed to Applicant's specification (page 13, lines 14-18):

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“

As previously indicated, the wafer 16 is separated from the electrode 22 in the preferred embodiment 10 of this invention. The separation may be in the order of 0.1 to 2.0 millimeters.

This causes two (2) capacitors 52 and 54 in Figure 4b to be defined by the electrode 22...

“

As such, Applicant's claim to two capacitors is a claim to a resulting physical phenomena resulting from the operation of Applicant's invention. Based on the identical physical processes resulting from the identical operation of Koshimizu's corresponding apparatus components, and as further demonstrated by Mountsier, the Examiner affirms that Koshimizu inherently teaches Applicant's claimed invention. Further, when the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

In response to Applicant's request to produce the two claimed capacitors, the Examiner has stated in the prior action:

“

it is anticipated by Koshimizu and common practice in the art that all wafers (or other articles) positioned on supports or electrodes would necessarily have a gap between the wafer/article and the support surface upon which the wafer/article is resting or electrically clamped and where providing a direct current bias as a result of the first (134) and second (130) sources of alternating voltage. This is demonstrated by Mountsier who shows a typical wafer-support interface (62/52; Figure 6). As such, when the structure recited in the reference is substantially

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identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

“

12. In response to Applicant's position that "...Mountsier does not disclose two (2) capacitors where one of these capacitors has plates defined by the equivalent of the electrode 22 and the electrically conductive deposition layers in the wafer 16..." (page 26), it is well established that apparatus claims must be structurally distinguished from the prior art (In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does ." (emphasis in original) Hewlett - Packard Co . v. Bausch & Lomb Inc ., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), MPEP – 2114). Further, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Exparte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (703) 305-1351. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official after final fax phone number for the 1763 art unit is (703) 872-9311. The official before final fax phone number for the 1763 art unit is (703) 872-9310. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (703) 308-0661. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (703) 308-1633.



JEFFRIE R. LUND
PRIMARY EXAMINER